

**PRELIMINARY INVESTIGATION REPORT
REVISION 0
FOR
LUSHER STREET GROUNDWATER CONTAMINATION SITE
ELKHART, INDIANA**

NPL STATUS: NPL SITE

Prepared for

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Region V
Emergency Response Branch
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Prepared by

WESTON SOLUTIONS, INC.
750 East Bunker Court, Suite 500
Vernon Hills, Illinois 60061

Date Prepared	March 16, 2010
TDD Number	S05-0008-0808-008
Document Control Number	506-2A-AFTZ
Contract Number	EP-S5-06-04
START Project Manager	Omprakash Patel
Telephone Number	(847) 918-4051
U.S. EPA Task Monitor	Syed Quadri

CONTENTS

1.	INTRODUCTION.....	5
1.1	PROJECT OBJECTIVES	5
1.2	REPORT ORGANIZATION.....	5
2.	SITE HISTORY AND BACKGROUND INFORMATION	6
2.1	DESCRIPTION OF INVESTIGATION LOCATIONS.....	10
2.1.1	Walerko Tool & Engineering.....	10
2.1.2	Flexible Foam Products	11
2.1.3	Gaska Tape.....	11
2.1.4	Action Auto Salvage	11
2.1.5	Facility at 1706 W. Lusher Avenue	12
2.1.6	Atlas Chemical Milling.....	12
2.1.7	Holland Metal Fabricating Company.....	13
2.1.8	Colbert Packaging	13
2.1.9	The Sturgis Metal (aka Elkhart Metal)	13
2.1.10	Bristol Auto Parts West	14
2.1.11	Cullip Industries, Inc.....	14
2.1.12	B-D Industries, Inc.....	14
2.1.13	Elkhart Plating	15
2.1.14	Zurn Facility.....	15
2.1.15	Adorn Facility	15
2.1.16	Forest River, Inc.....	16
2.1.17	Conrail Right of Way.....	16
2.1.18	Dump North of Conrail Right-Of-Way.....	17
2.1.19	WeVac Plastics	17
2.1.20	K.G. Gemeinhardt Company, Inc.	17
2.2	SITE SPECIFIC GEOLOGY	19
3.	FIELD INVESTIGATION.....	20
3.1	SOIL BORING ADVANCEMENT AND SAMPLING PROCEDURES	20
3.2	GROUNDWATER SAMPLING FROM SOIL BORINGS AND EXISTING MONITORING WELLS	21
3.2.1	Temporary Piezometer Installation.....	23
3.3	SAMPLING AT EACH PROPERTY	24
3.3.1	Investigation at the Walerko Tool Facility (1935 W. Lusher Avenue).....	24
3.3.2	Investigation at the Flexible Foam Facility (1900 W. Lusher Avenue).....	24
3.3.3	Investigation at the Gaska Facility (1810 W. Lusher Avenue).....	24
3.3.4	Investigation at the Action Auto Salvage Facility (1750 W. Lusher Avenue).....	25
3.3.5	Investigation at the Vacant Facility (1706 W. Lusher Avenue)	25
3.3.6	Investigation at the ATLAS Chemical Milling Facility (1627 W. Lusher Avenue).....	25

3.3.7	Investigation at the Holland Metal Fabricating Company Facility (1550 W. Lusher Avenue).....	25
3.3.8	Investigation at the Colbert Packaging Facility (1511 W. Lusher Avenue).....	25
3.3.9	Investigation at the Sturgis Metal Facility (1514 W. Lusher Avenue and 1819 14th Street).....	26
3.3.10	Investigation at the Bristol Auto Parts West Facility (1422 W. Lusher Avenue).....	26
3.3.11	Investigation at the Cullip Industries, Inc. Facility (1900 Fieldhouse Avenue)	26
3.3.12	Investigation at the B-D Industries, Inc. Facility (1715 Fieldhouse Avenue)	26
3.3.13	Investigation at the Elkhart Plating Facility (1913 South 14 th Street).....	27
3.3.14	Investigation at the Zurn Facility (1900 West Hively Avenue).....	27
3.3.15	Investigation at the Adorn Facility (1808 West Hively Avenue)	27
3.3.16	Investigation at the Forest River, Inc. Facility (1800 West Hively Avenue).....	27
3.3.17	Investigation along the Conrail Right-of-Way	27
3.3.18	Dump North of Conrail Right-of-Way	28
3.3.19	WeVac Plastics	28
3.3.20	K.G. Gemeinhardt Company, Inc.	28
3.4	SAMPLE NUMBERING SYSTEM.....	28
3.5	CLP SAMPLE NUMBERING SYSTEM	31
3.6	DATA VALIDATION.....	31
4.	INVESTIGATION RESULTS.....	32
4.1	WALERKO TOOL FACILITY (1935 LUSHER AVENUE PROPERTY).....	32
4.1.1	Soil Samples.....	32
4.1.2	Groundwater Samples	32
4.1.3	Summary	33
4.2	FLEXIBLE FOAM FACILITY (1900 LUSHER AVENUE PROPERTY).....	33
4.2.1	Soil Samples.....	34
4.2.2	Groundwater Samples	34
4.2.3	Summary	35
4.3	GASKA FACILITY (1810 LUSHER AVENUE PROPERTY)	35
4.3.1	Soil Samples.....	35
4.3.2	Groundwater Samples	35
4.3.3	Summary	36
4.4	ATLAS CHEMICAL MILLING FACILITY (1627 W. LUSHER AVENUE PROPERTY)	36
4.4.1	Soil Samples.....	36
4.4.2	Groundwater Samples	37
4.4.3	Summary	37
4.5	HOLLAND METAL FABRICATING FACILITY (1550 W. LUSHER AVENUE PROPERTY)	38

4.5.1	Soil Samples.....	38
4.5.2	Groundwater Samples.....	38
4.5.3	Source of Contamination	38
4.6	COLBERT PACKAGING FACILITY (1511 W. LUSHER AVENUE PROPERTY).....	39
4.6.1	Soil Samples.....	39
4.6.2	Groundwater Samples.....	39
4.6.3	Summary	39
4.7	STURGIS FACILITY (1819 SOUTH 14 TH STREET PROPERTY).....	40
4.7.1	Soil Samples.....	40
4.7.2	Groundwater Samples.....	40
4.7.3	Summary	41
4.8	CULLIP INDUSTRIES FACILITY (1900 FIELDHOUSE AVENUE PROPERTY).....	41
4.8.1	Soil Samples.....	42
4.8.2	Groundwater Samples.....	42
4.8.3	Summary	42
4.9	B-D INDUSTRIES FACILITY (1715 FIELDHOUSE AVENUE PROPERTY).....	43
4.9.1	Soil Samples.....	43
4.9.2	Groundwater Samples.....	43
4.9.3	Summary	44
4.10	ELKHART PLATING FACILITY (1913 14 TH STREET PROPERTY)	44
4.10.1	Soil Samples.....	44
4.10.2	Groundwater Samples.....	44
4.10.3	Summary	45
4.11	ZURN FACILITY (1900 WEST HIVELY AVENUE PROPERTY)	45
4.11.1	Soil Samples.....	45
4.11.2	Groundwater Samples.....	45
4.11.3	Summary	46
4.12	ADORN FACILITY (1808 WEST HIVELY AVENUE PROPERTY).....	46
4.12.1	Soil Samples.....	46
4.12.2	Groundwater Samples.....	47
4.12.3	Source of Contamination	47
4.13	FOREST RIVER FACILITY (1800 WEST HIVELY AVENUE PROPERTY).....	47
4.13.1	Soil Samples.....	48
4.13.2	Groundwater Samples.....	48
4.13.3	Summary	48
4.14	CONRAIL RIGHT-OF-WAY PROPERTY	48
4.14.1	Soil Samples.....	49
4.14.2	Groundwater Samples.....	49
4.14.3	Summary	49
5.	SUMMARY OF INVESTIGATION	50

5.1	WALERKO TOOL FACILITY (1935 WEST LUSHER AVENUE PROPERTY).....	50
5.2	FLEXIBLE FOAM FACILITY (1900 WEST LUSHER AVENUE PROPERTY).....	50
5.3	GASKA FACILITY (1810 LUSHER AVENUE PROPERTY)	51
5.4	ATLAS CHEMICAL MILLING FACILITY (1627 WEST LUSHER AVENUE PROPERTY)	51
5.5	HOLLAND METAL FABRICATING FACILITY (1550 WEST LUSHER AVENUE PROPERTY)	51
5.6	COLBERT PACKAGING FACILITY (1511 WEST LUSHER AVENUE PROPERTY).....	52
5.7	STURGIS FACILITY (1819 14 TH STREET PROPERTY)	52
5.8	CULLIP INDUSTRIES FACILITY (1900 FIELDHOUSE AVENUE PROPERTY).....	52
5.9	B-D INDUSTRIES FACILITY (1715 FIELDHOUSE AVENUE PROPERTY).....	52
5.10	ELKHART PLATING FACILITY (1913 14 TH STREET PROPERTY)	53
5.11	ZURN FACILITY (1900 WEST HIVELY AVENUE PROPERTY)	53
5.12	ADORN FACILITY (1808 WEST HIVELY AVENUE PROPERTY).....	53
5.13	FOREST RIVER FACILITY (1800 WEST HIVELY AVENUE PROPERTY).....	53
5.14	CONRAIL RIGHT-OF-WAY PROPERTY.....	54
5.15	K.G. GEMEINHARDT COMPANY, INC.....	54

1. INTRODUCTION

Under Technical Direction (TDD) No. 0008-0808-008, the United States Environmental Protection Agency (U.S. EPA) Region V directed the Weston Solutions, Inc. (WESTON), Superfund Technical Assessment and Response Team (START) to conduct a preliminary investigation for soil and groundwater at twenty properties in Elkhart, (add the county here), Indiana.

1.1 PROJECT OBJECTIVES

WESTON START developed a sampling and analysis plan (SAP) for the preliminary investigation, which was approved by the U.S. EPA. The SAP includes the collection of soil and groundwater samples from 20 industrial and commerce properties for investigating groundwater contamination for the Lusher Street Groundwater Contamination Plume (Lusher Street Site). The investigation on the 20 properties was conducted to determine if the properties were contributing chlorinated solvents of interest to known groundwater contamination. Out of 20 properties that is being investigated, 19 properties are within currently defined site boundaries and one property (Gemeinhardt Site) is south of the currently defined site boundaries. The chlorinated solvents of interest are trichloroethene (TCE)] 1,1,1-Trichloroethane (1,1,1-TCA) cis-1,2-dichloroethene (cis-1,2-DCE) and tetrachloroethene (PCE).

1.2 REPORT ORGANIZATION

This preliminary investigation report is divided into the five sections summarized below.

- **Section 1** - Introduction: This section discusses the project objectives and report organization.
- **Section 2** – Site History and Background Information: This section discusses the site/property description, history, and previous investigations results (as applicable) for the four properties investigated.
- **Section 3** - Field Investigation: This section describes the investigation activities, including sampling, survey, and measurement methods; analytical laboratory procedures; and monitoring well abandonment.

- **Section 4** - Investigation Results: This section summarizes the analytical results of the field investigation.
- **Section 5** - Summary of Investigation: This section summarizes the investigation results and presents conclusions based on data collected during the investigation.

2. SITE HISTORY AND BACKGROUND INFORMATION

The Lusher Street Groundwater Contamination Site consists of a groundwater plume. The plume is primarily a chlorinated solvent, [including: TCE, 1,1,1-TCA, trans 1,2-dichloroethylene (trans 1,2-DCE), cis 1,2-DCE, 1,1-Dichloroethylene (1,1-DCE), and PCE] plume. The current plume boundary was delineated using data from residential and commercial private wells. The outer boundaries of the contaminated groundwater plume have tentatively been established from west to east along Lusher Avenue from Nappanee Street to Oakland Street and north to south from the St. Joseph River to Hively Avenue. The land use surrounding the site is mainly commercial, industrial, and residential. Non-detect wells were identified around the plume. The plume was drawn by connecting a line to the perimeter of all contaminated wells on the farthest edges of the sample area. Thirty-six wells, consisting of residential and commercial private wells, were found to be contaminated with chlorinated volatile organic compounds (VOCs). These 36 wells are within a one-mile radius of the center of the plume. The center of the plume is denoted by the private well (at the Avalon Street location) with the highest concentration of VOCs in the drinking water.

In 2006, the Indiana Department of Environmental Management (IDEM) Site Investigation Section began Site Inspection (SI) activities at the Lusher Street Site. IDEM conducted five sampling events. The results from investigations showed that the concentrations of TCE were above the U.S. EPA maximum contaminant levels (MCL) of 5.0 micrograms per liter (ug/L) for TCE in nine wells in a range of 7.4 to 640 ug/L. The water in one well was found to contain elevated levels of 1,1-DCE (16 J ug/L). J is data qualifier and defined the estimated concentrations. The MCL of 1,1-DCE is 7 ug/L. A total of 10 wells were found to exceed the MCL. Low concentrations of chlorinated VOCs (below MCLs) were detected in 24 wells.

The highest concentration of TCE is located at 41°40'22.52" north latitude and 85° 59' 46.41 " west longitude.

Although the source of the chlorinated solvents has not been identified, there are numerous facilities in the area of the plume that may have contributed to the contamination. The Groundwater Contamination area was discovered during an investigation of the K.G. Gemeinhardt Company (Gemeinhardt) as discussed below. From the 1940s through 1977, Gemeinhardt and its predecessors owned and operated manufacturing facilities on a three-acre site at 57882 State Route 19, Elkhart, Indiana. In 1985, Gemeinhardt agreed to an interim remedial action, whereby Gemeinhardt would conduct an investigation sufficient to fully characterize the sources and extent of groundwater identified to the north-northwest of the facility. While conducting an extent of contamination study at Gemeinhardt, under the terms of the 1985 Consent Order with the U.S. EPA, VOCs were detected in private drinking water wells in an area immediately south of Lusher Avenue. At the time of this investigation, Gemeinhardt believed that the contamination in this area was independent of the Gemeinhardt groundwater plume. The Elkhart County Health Department (ECHD) was notified of the contamination. In 1987, ECHD began an investigation of the area. The investigation was limited to an area bordered by State Road 19 on the west, Avalon Street on the east, Lusher Avenue on the south, and the St. Joseph River on the north. ECHD sampled 145 wells in this area. ECHD identified 103 private drinking water wells that were found to contain elevated levels of TCE and 1,1,1-TCA. Subsequently, ECHD requested assistance from U.S. EPA in providing alternate drinking water supplies to the affected residences and businesses.

In October 1987, the EPA On-Scene Coordinator (OSC), in conjunction with U.S. EPA's Technical Assistance Team (TAT) contractor, began an investigation into the groundwater contamination. Analytical results taken by TAT on November 3, 1987, confirmed the presence of TCE and 1,1,1-TCA as well as other VOCs found in concentrations exceeding the U.S. EPA removal action levels of contaminated drinking water sites. Of greatest concern were the levels of 1,1,1 TCA [1,590 parts per billion (ppb)] at a location on W. Indiana and TCE (804 ppb) at a location on 17th Street. As a result of the investigation, U.S. EPA initiated a removal action at the

Lusher Street Site to mitigate the immediate threats to human health and the environment posed by the groundwater contamination of residential and business water wells. EPA discovered the Lusher Street Site on January 12, 1988. It should be noted that Lusher Street is actually Lusher Avenue. All references to Lusher Street apply to Lusher Avenue throughout this report. The removal action consisted of U.S. EPA installing point of use carbon filters at 13 Elkhart residences and businesses to reduce contaminant concentrations to below the acceptable safe drinking water standard for all contaminants involved. In addition, EPA converted two residences' water supplies from private wells to city water because these residences showed contaminant levels that exceed the contaminant actions levels for the Agency for Toxic Substances and Disease Registry (ATSDR) bathing concern levels. As directed by the EPA OSC, TAT conducted an extent of contamination study from January 18, 1988, to March 16, 1988, which included collecting a total of 45 residential and business well samples. From August 18, 1988, to August 31, 1988, based on the results of the extent of contamination study, five additional residences and businesses were provided with city water hookups. This removal action, which consisted of investigation and provision of point of use carbon filters and provision of city water hookups was completed on August 31, 1988.

IDEM began its own water testing during the summer of 1989 to determine if other residents would be provided alternate water supplies at the state's expense. Municipal water lines were extended to the majority of properties impacted except at one residence, located on Avalon Street. A municipal hook up was not provided to the residence on Avalon Street because no municipal water main was in close proximity to it.

U.S. EPA identified Walerko Tool & Engineering Corporation (Walerko) as liable for the groundwater contamination around Lusher Street. Walerko, which commenced business operations in 1952, engages in machining, tool and die work at its manufacturing plant located at 1935 West Lusher Avenue in Elkhart, Indiana. Walerko used the cleaning solvent trichloroethane (TCA) as a parts cleaner in its manufacturing process. Periodically, when the tanks and smaller containers of solvent became dirty, Walerko employees disposed of the spent solvent outside of the facility onto the ground and then refilled the containers with fresh solvent.

In 1987, the drinking water well located at Walerko indicated the presence of TCA at a concentration of 660 ppb and TCE at a concentration of 38 ppb. On September 24, 1993, U.S. EPA filed a Cost Recovery Consent Decree with Walerko. The consent decree included a complaint pursuant to Sections 104(e) and 107 of the Comprehensive Environmental Response, Compensation, Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C Sections 9604(e) and 9607, and Section 3007 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. Section 6927. The United States was seeking reimbursement of response costs incurred by U.S. EPA and the Department of Justice (DOJ) for response actions in connection with the release or threatened release of hazardous substances, including 1,1,1-TCA and TCE, at the Lusher Street Site in Elkhart, Indiana and civil penalties for Walerko's failure to timely respond to U.S. EPA's information requests dated March 26, 1990.

In 1987, the water at the same Avalon Street location mentioned above had 1,1,1-TCA at 69 ug/L, TCE at 11 ug/L, 1,1,1-TCA at 74 ug/L, dichloroethane (DCA) at 19 ug/L, and dichloroethene (DCE) at 14 ug/. In 2005, the water at the Avalon Street location was sampled by IDEM staff and the sample results revealed that the TCE levels were as high as 700 ug/L. Subsequent groundwater sampling, as part of the SI activities conducted in 2006, revealed that numerous nearby private wells have also been impacted with elevated levels of VOCs .

In 2006, IDEM, Site Investigation Section, began SI activities at the Lusher Street Site. The results showed that the concentrations of TCE were above the MCL of 5.0 ug/L for TCE in 11 wells in a range of 7.4 to 640 ug/L. The water in another well was found to contain elevated levels of 1,1-DCE (16J ug/L). The MCL of 1,1-DCE is 7 ug/L. A total of ten wells used for drinking water were found to exceed U.S. EPA's MCLs. Concentrations of chlorinated VOCs (below MCLs) were detected in twenty-six wells.

After the results of the water samples were reviewed and it was determined that the water was unacceptable for use, IDEM's State Clean Up Program provided bottled water to those people whose water was found to exceed MCLs. IDEM alerted the U.S. EPA OSC that some residential sample results for TCE had exceeded or were close to the MCL. In August 2006, START sampled four residential locations and one business location to correlate IDEM's data results.

Based on the analytical results, the U.S. EPA's OSC then provided some of the residents with point of use carbon filters.

In addition to the current groundwater contamination, U.S. EPA and IDEM are also concerned about potential vapor intrusion into the residences of the area.

2.1 DESCRIPTION OF INVESTIGATION LOCATIONS

I would add a couple of sentences here to describe the information you are going to present here. Here you are mentioning the commercial locations that are part of this investigation? Please tell me what this next section is going to discuss in a few sentences.

2.1.1 Walerko Tool & Engineering

Walerko Tool & Engineering (Walerko) is a registered ISO9002 tool and engineering company. Walerko commenced business operations in 1952 and is engaged in manufacturing machining, tool and die work at its plant located at 1935 W. Lusher Avenue in Elkhart, Indiana. Walerko used the cleaning solvent TCA as a parts cleaner in its manufacturing process. Periodically, when the tanks and smaller containers of solvent became dirty, Walerko employees disposed of the spent solvent outside of the facility onto the ground, and then refilled the containers with fresh solvent. In 1987, the drinking water well located at Walerko indicated the presence of TCA at a concentration of 660 ppb and TCE at a concentration of 38 ppb. In 2007, an inspection along the eastern sector of the facility revealed dark oil stained soils beneath several dumpsters containing scrap metal. EPA identified Walerko as liable for the groundwater contamination around Lusher Street. On September 24, 1993, U.S. EPA filed a Cost Recovery Consent Decree with Walerko. The consent decree included a complaint pursuant to Sections 104(e) and 107 of the CERCLA, 42 U.S.C Sections 9604(e) and 9607, and Section 3007 of RCRA, 42 U.S.C. Section 6927. The United States was seeking reimbursement of response costs incurred by U.S. EPA and the DOJ for response actions in connection with the release or threatened release of hazardous substances, including 1,1,1-TCA and TCE, at the Lusher Street Site in Elkhart, Indiana, and civil penalties for Walerko's failure to timely respond to EPA's information requests dated March 26, 1990. On July 20, 1993, Walerko agreed to enter into the consent

decree provided a settlement schedule for payment of past costs \$125,330 and a civil penalty \$19,670.

2.1.2 Flexible Foam Products

Flexible Foam Products is located at 1900 W. Lusher Avenue in Elkhart, Indiana. The company was originally known as Indiana Foam. The company appears to be a subsidiary of Ohio Decorative Products, Inc. since 1971. The company currently manufactures polyurethane foam and is a supplier of foam and foam products for residential and commercial applications. Toluene diisocyanate is used to manufacture the foam. Other substances used at the facility include carbon dioxide (which replaced methylene chloride), colorants, fire retardants, ethyl acetone naphtha, tin, and Poly All, which is supplied by Bayer. It would appear that 1,1,1-TCA was also used at the facility in 1991 as exhibited by Flexible Foam Products U.S EPA Toxics Release Inventory.

2.1.3 Gaska Tape

Gaska Tape (Gaska) is located at 1810 W. Lusher Avenue in Elkhart, Indiana. This company is a poly vinyl chloride (PVC) foam manufacturer. The company began operations in 1965. Gaska Tape is a manufacturer of closed-cell foams and adhesive tapes (PVC Foam, Polyester Foam and Gaska Hi Bond® Adhesive Tapes). TCE had been used at the site as a support solvent for suspending silicone as a release coating agent. The company also uses oil base plasticizers in its manufacturing processes. The company utilizes the services of D&B Environmental Services to dispose of its waste material. The facility was formerly a RCRA large quantity generator of hazardous waste but is now a small quantity generator. The facility uses a regenerative thermo oxidizer that burns VOCs before they go into the air. A dry pond is located in a wooded area north of the plant building and captures any runoff from the facility. This pond is not lined.

2.1.4 Action Auto Salvage

Action Auto Salvage, located at 1750 W. Lusher Avenue in Elkhart, Indiana, accepts salvageable vehicles and sells them for parts. At times the facility sells the entire vehicle to scrap yards. The

company started operations three years ago. Other businesses that occupied the property prior to Action Auto Salvage include Fidler Concrete Company, BFI Waste Management, First Step Finance, and an automotive repair shop. Substances currently used on site include antifreeze and hydraulic oil (15-40 Shell Rotella). A company representative stated that no degreasers or cleaners are used at the facility. During the entire investigation, this property was closed.

2.1.5 Facility at 1706 W. Lusher Avenue

The facility at 1706 W. Lusher Avenue appears to be vacant and there is no information on file for this facility at this time. According to EPA's Toxic Release Inventory (TRI), this facility operated under the name CRA GEN, Inc. Woodtek Division as a wood kitchen cabinet and countertop manufacturer.

(See http://oaspub.epa.gov/enviro/tris_control.tris_print?tris_id=46517WDTKN1706W and Appendix A).

2.1.6 Atlas Chemical Milling

Atlas Chemical Milling is a division of Atlas Die and specializes in flexible dies for reciprocating or rotary application for hundreds of companies in a number of industries. The company is located at 1627 W. Lusher Avenue in Elkhart, Indiana. Atlas Chemical Milling etches steel for labels and boxes. Dies are manufactured to cut out various materials for converters, which make paper into different types of products. The finished steel is cleaned, laminated, etched, and coated. Silver halide is applied to produce specified images on the steel. Chemicals used in the process include acetone base paint, toluene, and acids. Hazardous wastes are handled by Dynecol (part of PVS Chemical in Detroit), and Univar, based in Chicago. The company also utilizes its own water treatment facility, which treats all water before it discharges it to the municipal waste water treatment plants. It should be noted that large crevasses were observed in the floor in parts of the plant building as a result of acids leaking from vats. Drinking water is supplied by the city municipal water system. The company has several onsite monitoring wells.

2.1.7 Holland Metal Fabricating Company

The Holland Manufacturing Fabricating Company is a steel manufacturer for the mobile home industry, located on 1550 W. Lusher Avenue in Elkhart, Indiana. The company has been in business for over 10 years. This facility produces frames, cross members, and front ends. Bed rails for pickup trucks are also manufactured at this location. The company utilizes the services of Michiana Industrial Lubricants to change out spent oils within their machines. Municipal water is used at the facility for drinking water. The facility utilizes a septic system. Only soaps are used in its operations. A site representative indicated that no solvents are used in their processes.

2.1.8 Colbert Packaging

Colbert Packaging is a cardboard manufacturing company that prints and folds cartons for various products. The company is located at 1511 W. Lusher Avenue in Elkhart, Indiana. Other services the company performs include structural design and CAD/CAM sample making, full prepress, in-house sheeting, printing, die making, die cutting, gluing and windowing. Approximately 30% of the boxes are manufactured for the food industry, 50% for hardware, and 20% for miscellaneous goods (ie. computer software.). The facility uses 1,2,4 trimethyl benzene and 1,3,5 trimethylbenzene based solvents to clean the ink on the rockers. Isopropanol anhydrous and some oils are also used in the manufacturing process. The company utilizes a backhouse dust collector to capture paper dust. Waste is handled by HIMCO and D&B Environmental. This company has been at this location for the past 25 years. The company uses the municipal water system for drinking water.

2.1.9 The Sturgis Metal (aka Elkhart Metal)

The Sturgis Metal (aka Elkhart Metal) is a metal recycling facility located at 1514 W. Lusher Avenue in Elkhart, Indiana. The facility accepts and purchases scrap ferrous and nonferrous metal. The facility utilizes hydraulic oils, diesel fuel, antifreeze, transmission fluid, and solvents for a parts washer. Most of these fluids are stored in the maintenance building. All generated waste is handled by Safety Clean. In 2006, soil samples were collected by IDEM's Enforcement

Section at the Sturgis Metals facility to address some citizen complaints. Analysis of the soil revealed cis 1, 2 - DCE at an estimated 1.6J microgram per kilogram (ug/kg) and PCE in an autofluff sample was estimated at 170J ug/kg.

2.1.10 Bristol Auto Parts West

Bristol Auto Parts West primarily sells automotive parts and accessories. The company is located at 1422 W. Lusher Avenue in Elkhart, Indiana. There is no use of solvents or cleaners at this business, which has been at this location for the past 28 years. This business operated a small machine shop more than 18 years ago. The site representative had stated that the Auto Trade Center was formerly located adjacent and to the east of their property approximately five or six years ago. Oil and antifreeze were observed to have been dumped on the ground at that facility. This facility appeared to be vacant at the time of investigation and was not investigated due to access problems.

2.1.11 Cullip Industries, Inc.

Cullip Industries, Inc. was founded in 1959 as a small tool die job shop as was known as Cullip Tool & Die Inc. Cullip Industries, Inc. is located at 1900 Fieldhouse Avenue in Elkhart, Indiana. In 1982, the company invested in CNC equipment. The machining side of the business grew to the point that in 1990 a machining division was started. The company served the following industries with stamping dies: transportation, construction, towing, seating, recreational vehicle, and security. The company also specializes in blanking, pierce and cutoff, and progressive dies. Water soluble cutting oil (including HocutV4000) and vegetable base coolants are used in the machinery process. No degreasers are used. The company uses Amosol for cleaning purposes and also uses a parts washer. Wastes are handled by Usher Oil (formerly Berreth Oil) based out of Detroit, Michigan. The municipal water system supplies drinking water to the facility.

2.1.12 B-D Industries, Inc.

B-D Industries, Inc. is located at 1715 Fieldhouse Avenue in Elkhart, Indiana. The company was founded in 1979 and processes metal castings for the aerospace industry. The types of castings

that the company works on include landing gears, brake parts, and other parts for 747s, 737s, and other airplanes. Parts are cleaned and put in tanks of sulfuric acid as part of a plating/anodizing process (as the company representative stated: the company changes the molecular structure of aluminum to aluminum oxide for corrosion protection). Sulfuric acid, nitric acid, sodium hydroxide, hydrogen chloride (HCl), methyl ethyl ketone (MEK), and TCE are liquids that the company utilizes in their processing. The company also uses some hydraulic oils. All of the hazardous wastes are removed from the facility's property by Safety Clean twice a year.

2.1.13 Elkhart Plating

There is no information in site files for the facility at 1913 South 14th Street. According to Elkhart Plating's website, this facility is a zinc plating facility that was established in 1919 and has been operated at this current location since 1955. The services this facility provides include zinc electroplating, alkaline non-cyanide barrel and rack zinc plating, applying blue(clear) trivalent, yellow and black chromate conversion coating, cleaning and pickling, zinc stripping, baking for hydrogen embrittlement relief, and bright-dip brass. (See <http://www.elkhartplating.com/> and Appendix A.)

2.1.14 Zurn Facility

There is no information in site files for the facility at 1900 West Hively Avenue and START was unable to interview representatives of the company during site visits. Zurn manufactures plumbing products and accessories. According to the Elkhart Chamber of Commerce, the facility in Elkhart manufactures polyethylene tubing. (See <http://www.zurnpex.com/> and http://www.elkhart.org/business_directory.php?alpha=z and Appendix A.)

2.1.15 Adorn Facility

There is no information on file for the facility at 1808 West Hively Avenue. Adorn was founded in 1986 as a facility that manufactures interior components for recreational vehicles (RVs) and manufactured housing. This includes laminated wall paneling and cabinet doors and laminated products and slotwall for the industrial market, furniture, kitchen cabinets, and store fixture

applications. This facility was acquired by Patrick Industries, Inc. in 2007. (See <http://www.insideindianabusiness.com/newsitem.asp?ID=22723> and Appendix A.). You did not mention use of any chemicals. Please make some statement here.

2.1.16 Forest River, Inc.

Forest River, Inc. is a manufacturer of Class A diesel motor homes. The company is located at 1800 West Hively Avenue and has been at this location since 2003. The chassis, engines, and transmissions are purchased and Forest River, Inc. installs the floors, walls, ceilings, and all furnishings (which includes installing fiberglass laminates, electrical wiring, and appliances). Some aluminum welding is performed in this process. The company applies adhesives and carpeting, and conducts some painting activities. Waste from the company operations includes paint solvents, antifreeze, and oils. All wastes are handled by D&B Environmental. No chlorinated solvents are used. Skyline Mobile Home, Inc. operated on the property prior to Forest River Inc.'s current operations.

2.1.17 Conrail Right of Way

There is no information on file for the Conrail right-of-way area. The Conrail railyard to the west of the sampling locations began as New York Central Railroad in 1956. In 1976, Conrail took over the management of the Elkhart Yard. According to EPA ID#IND000715490 National Priorities List (NPL) fact sheet, the railyard is a Superfund site with TCE and carbon tetrachloride (CCl₄) in a groundwater plume migrating northwest of the railyard and TCE in a groundwater plume migrating north of the railyard. (See <http://www.epa.gov/R5Super/npl/indiana/IND000715490.htm> and Appendix A.) This site is located to the west of the sampling area. Only partial investigation was completed at this site during this investigation due to the presence of significant utilities on the north side of the railroad track.

2.1.18 Dump North of Conrail Right-Of-Way

There is no information on file for the dump north of Conrail-right-of-way area. This location was not investigated during this investigation because the actual location was not determined.

2.1.19 WeVac Plastics

WeVac Plastics was founded in 1989 to service the RV industry. The company is located at 2401 South 17th Street in Elkhart, Indiana. Since its inception, WeVac Plastics has provided custom thermoforming, silk-screening, secondary assembly, five axis CNC trimming and much more. The company has its own in-house tooling shop, product development department, and pattern cutting five axis CNC. Materials that WeVac Plastics handles are ABS, high density polytetrafluoroethylene, high impact polystyrene, polycarbonate, and laminated foils, (i.e. brushed aluminum, marble, wood grain). The company uses a two epoxy glue that contains MEK and acetone. No chlorinated solvents are used. The company utilizes the city municipal water system for drinking water. It should be noted that company staff had just extinguished a fire prior to the inspection. This facility was not investigated during the site activities due to access problems.

2.1.20 K.G. Gemeinhardt Company, Inc.

K.G. Gemeinhardt Company, Inc. (Gemeinhardt) and its predecessors owned and operated manufacturing facilities on a three-acre site at 57882 State Route 19. Gemeinhardt is located on Route 19 in Elkhart, Indiana approximately 0.75 miles south of Lusher Avenue. Gemeinhardt manufactures musical instruments. In the process of manufacturing these instruments, Gemeinhardt uses 1,1,1-TCA, TCE, and PCE. In 1985, Gemeinhardt agreed to an interim remedial action, whereby Gemeinhardt would conduct an investigation sufficient to fully characterize the sources and extent of groundwater identified to the north-north-west of the facility. While conducting an extent of contamination study at Gemeinhardt under the terms of the 1985 Consent Order with the U.S. EPA, VOCs were detected in private drinking water wells in an area immediately south of Lusher Avenue. At the time of this investigation, Gemeinhardt believed that the contamination in this area was independent of the Gemeinhardt groundwater

plume. Historically, high levels of chlorinated solvents had been used at the Gemeinhardt facility. The chlorinated solvents detected in the drinking water wells include primarily TCE and PCE. Gemeinhardt produced process waste streams, which were disposed of on the facility. The process wastes drained to various sumps that pump the wastes to several dry wells, to a gravel seepage bed, or to a septic tank at the facility. These wastes were then allowed to seep into the ground and the shallow underlying aquifer. Records state that Gemeinhardt produced approximately 2,500 gallons of wastewater per operating day and were pumped to the various seepage systems. Sometime prior to December 25, 1984, Gemeinhardt ceased all wastewater discharges to the dry wells and removed approximately 1,000 cubic yards of contaminated soil from the facility. As of January 8, 1985, Gemeinhardt contracted with the City of Elkhart to dispose of its wastewater at the Elkhart Municipal Wastewater Treatment Plant. In 1988, Gemeinhardt completed a comprehensive hydrogeological study which found 1,1,1-TCA, TCE, and PCE in the groundwater at, and down-gradient of, Gemeinhardt and a plume containing these VOCs extending north-northwest from the Gemeinhardt plant. The hydrogeological report also found evidence of at least one other source of these VOCs unrelated to the Gemeinhardt facility. On January 23, 1990, U.S. EPA and IDEM issued an Administrative Order by Consent which required Gemeinhardt to undertake and complete certain response actions, including removal and treatment of groundwater, to prevent the migration of hazardous substances in groundwater, and to prevent exposure to groundwater containing hazardous substances. The recommended action consisted of installing three recovery wells and a treatment facility to remove and treat contaminated groundwater containing chlorinated VOCs.

A letter report written in 2008 summarizing the groundwater recovery and treatment system (Letter Report) at the Gemeinhardt site written by Cummings Riter Consultants Inc. of Pittsburgh, Pennsylvania, has been included in Appendix B. Based on information in this Letter Report two well nests (Nest 3 and Nest 5) are located on the northern part of the Gemeinhardt site, refer to Figure 1 in the Letter Report. Monitoring well nests 6, 12, 7, 10, 18, 8, 11, and 17 are offsite down-gradient wells, located on adjacent property (??). Chlorinated solvents (1,1,1 TCA, TCE and PCE) have been detected in one or more (site or offsite?) wells.

This location was not investigated during this current site investigation due to access problems.

2.2 SITE SPECIFIC GEOLOGY

Based on the materials encountered from boring advanced during this investigation, the surface area of the investigative site consists of fill material (i.e. topsoil, gravel, and/or asphalt and sub-base). The material underlying this fill material is primarily fine- to medium-grained sand with occasional silty sand lenses. The sand tends to grade from medium-grained to coarse-grained with depth across the investigation area. Groundwater was encountered at depths varying from 10 to 15 feet in most of the borings advanced during the investigation. The groundwater is usually encountered in the coarse-grained layer of sand. The groundwater flow at the site is northerly based on the Final HRS Documentation Record Package prepared as part of this site investigation (is it included in this report as an attachment). Also based on the historical information for Gemeinhardt property the groundwater flow is also northerly.

3. FIELD INVESTIGATION

This section describes the field and laboratory activities carried out during the Site Assessment (SA) at various properties within the Lusher Street Site. The field investigation was completed in two rounds from April 2009 to May 2009 and in October 2009.

- Soil-boring drilling and soil sampling;
- Groundwater sampling from temporary wells, existing monitoring wells and a municipal well; and
- Laboratory analysis.

The SA was conducted to identify the potential source(s) that may be contributing to chlorinated solvents of interest to groundwater contamination within the Lusher Street Site. The SA field investigation was performed in accordance with the U.S. EPA approved sampling and analysis plan.

3.1 SOIL BORING ADVANCEMENT AND SAMPLING PROCEDURES

The soil investigation included advancing 76 soil borings at 14 different properties from April to May 2009 and in October 2009. The investigation was conducted to characterize potential sources and characterize subsurface geology.

The soil borings were advanced using a truck-mounted or track-mounted Geoprobe® capable of entering multi-terrain areas as needed based on site conditions. The company Cabeno was subcontracted to complete the soil borings for the soil investigation. The Geoprobe® advanced a dual tube four- or five-foot-long, 1.5-inch-diameter Macro-Core® sampler equipped with a clean, disposable acetate sleeve. After the removal of the Macro-Core® sampler from the borehole, the sampler was opened on a clean surface (such as polyethylene sheeting) and the soil within the acetate sleeve was visually screened. WESTON personnel screened each soil core with a hand-held portable photo-ionization detector (PID) and logged the soil sample, noting items such as sample recovery, lithology, moisture content, consistency, color, staining, odor, or other observations. Soil borings were logged according to American Society for Testing and

Materials (ASTM) method D2488. The lithology for each boring will be classified using the Unified Soil Classification System (USCS). The soil boring logs are provided in Appendix C, which also include the PID monitoring results. Samples were collected immediately after the acetate sleeve was opened and scanned with a PID in order to minimize the potential loss of VOCs. Sample material from the undisturbed sampling interval was collected in two-ounce glass jars and using five-gram Encore samplers. No mixing or compositing was performed on the sample material, thereby limiting the loss of VOCs from the sample. Duplicate samples were collected immediately after collection of the investigative sample from the same sampling interval. A minimum of one sample was collected from each four- or five-foot boring interval and placed on ice in a cooler after collection. Additional soil from the same interval was collected and placed in a sealable plastic baggie (Ziploc® or equivalent). The plastic bag was then placed in a warm area for at least 30 minutes prior to checking the head space with a PID. The concentrations of VOCs in the head space were recorded on the field boring logs.

The boreholes were advanced until five-feet below the groundwater table or to approximately 20 feet below ground surface (bgs). Each borehole was drilled to a minimum depth of 20 feet bgs. Soil borings were abandoned by injecting a bentonite grout into the borehole using tremmie methods. Alternately, if the borehole did not significantly collapse, a granular bentonite was used to abandon boreholes. At locations advanced through asphalt or concrete, the surface was repaired using an appropriate hole patch.

A total of 246 soil samples were collected and submitted to the U.S. EPA contract laboratory program (CLP) Laboratory for VOC and percent moisture analysis. Site-wide soil sampling results are present in a figure provided in Appendix E.

3.2 GROUNDWATER SAMPLING FROM SOIL BORINGS AND EXISTING MONITORING WELLS

A total of 73 grab groundwater samples were collected from 76 temporary PVC monitoring wells installed during soil boring. A total of 11 groundwater samples were collected from 11 existing monitoring wells. Samples were submitted to the EPA CLP Laboratory for VOC analysis.

When saturated conditions were encountered in a soil boring, a grab groundwater sample was collected from the saturated zone of the boring. To collect grab groundwater samples, a temporary one-inch-diameter polyvinyl chloride (PVC) monitoring well was installed in the soil boring across the saturated zone. A Geoprobe® (or equivalent) Screenpoint 15 or 16 groundwater sampler (bladder pump) and clean, disposable tubing were used to collect the grab and existing monitoring well groundwater samples from the temporary wells. The rods were pulled back to expose the screen to the water-bearing formation, allowing groundwater to enter the rod string. A rigid tube was inserted through the rods to the bottom of the sampler and the rod string/tube was purged for a minimum of two minutes. The procedures summarized below were used to collect the all the groundwater samples from temporary and existing monitoring wells.

Prior to commencing with groundwater sampling activities, the water level and total depth for each boring and temporary monitoring well was measured with an electrical sounding device (accuracy ± 0.01 feet). The depth to water and the time of measurement were recorded. The reference point for these depths was the top of the ground surface.

The boring and monitoring wells were developed at a flow rate between 150 and 300 milliliters per minute (mL/min). The wells were purged at a flow rate between 100 and 150 ml/min during sample collection and in an attempt to minimize drawdown.

Stabilization parameters, including pH, temperature, specific conductance, turbidity, dissolved oxygen (DO) and oxidation reduction potential (ORP), were measured through a flow through cell. Stabilization parameters were recorded by a WESTON field staff member at approximate five-minute intervals. Based on the site geology and groundwater yield, purging was conducted at each well until the field parameters stabilized or for five well volumes, whichever occurred first. Stabilization was considered achieved when three consecutive readings to within the following ranges: ± 0.1 standard unit (s.u.) for pH, ± 10 percent (%) for specific conductance, ± 1 degrees Celsius ($^{\circ}\text{C}$) for temperature, 10% for DO, 10% for ORP, and either 10% for turbidity or less than 10 nephelometric turbidity unit (NTU).

If insufficient groundwater was available and ran dry before the boring and/or temporary monitoring well could fill up the flow through cell, the boring and/or monitoring well was allowed to recharge for 15 minutes and then was pumped dry again and allowed to recharge before sampling.

Samples were collected directly from the pump tubing after purging was completed. Samples were analyzed for VOCs. All samples were collected unfiltered.

Volatile organic analyte (VOA) sample bottles were filled at an angle in order to limit splashing and bubbling. The VOA sample bottles were pre-preserved by the manufacturer with hydrochloric acid before collection of the sample. The VOA sample bottles were filled such that no air space was present in the bottle after it was capped. If bubbles appeared after the bottle was capped, a new sample was collected using a new, preserved VOA container to collect the sample. If bubbles persist, an unpreserved sample was collected (the field sample manager noted the absence of the preservative on the sample paperwork and in the field logbook).

Samples were maintained on ice after sample collection.

The dates and stabilization readings of temporary and existing monitoring well development and sampling are shown on the groundwater collection logs provided in Appendix C. Site-wide groundwater sampling results are present in a figure provided in Appendix E.

3.2.1 Temporary Piezometer Installation

A total of five soil borings were converted into temporary piezometer to determine groundwater flow direction. The proposed soil borings that were converted into piezometers are shown on Figure 4-1 through 4-28 and labeled as TMW0#.

The wells were constructed of 1.5-inch-diameter PVC piping with a 10-foot-long, 0.010-inch slotted screen. The well materials were lowered to the appropriate depth through the drill casing, depending on the type of drill rig used.

Each well was completed with a flush-mount cover with a locking cap. These protective covers were set in a concrete apron at each monitoring well location. Locks were provided for each flush-mount cover or casing.

Groundwater samples were collected from these temporary piezometers using the same procedure as the grab groundwater samples.

3.3 SAMPLING AT EACH PROPERTY

3.3.1 Investigation at the Walerko Tool Facility (1935 W. Lusher Avenue)

Five soil borings (LGC01-SB01 through LGC01-SB05) were completed at the Walerko facility. All five soil borings were converted into temporary wells. One existing monitoring well was found onsite. A total of 16 soil samples and six groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.2 Investigation at the Flexible Foam Facility (1900 W. Lusher Avenue)

Five soil borings (LGC02-SB01 through LGC02-SB05) were completed at the Flexible Foam facility. All five soil borings were converted into temporary wells. A total of 15 soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®, except sample SB05 which was collected with??.

3.3.3 Investigation at the Gaska Facility (1810 W. Lusher Avenue)

Six soil borings (LGC03-SB01 through LGC03-SB06) were completed at the Gaska facility. All six soil borings were converted into temporary wells. A total of 17 soil samples and six groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.4 Investigation at the Action Auto Salvage Facility (1750 W. Lusher Avenue)

EPA was unable to reach an agreement for access with the Action Auto Salvage facility at the time of the sampling investigation; therefore, no soil or groundwater samples were collected at this facility.

3.3.5 Investigation at the Vacant Facility (1706 W. Lusher Avenue)

U.S. EPA was unable to reach an agreement for access with the facility at the time of the sampling investigation; therefore, no soil or groundwater samples were collected at this facility.

3.3.6 Investigation at the ATLAS Chemical Milling Facility (1627 W. Lusher Avenue)

Five soil borings (LGC06-SB01 through LGC06-SB05) were completed at the Atlas Chemical Milling facility. Four of the five soil borings were converted into temporary wells. LGC06-SB03 could not be converted into a temporary well due to heaving sand. Three existing monitoring wells were found onsite. A total of 13 soil samples and seven groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.7 Investigation at the Holland Metal Fabricating Company Facility (1550 W. Lusher Avenue)

Five soil borings (LGC07-SB01 through LGC07-SB05) were completed at the Holland Metal Fabricating Company facility. All five soil borings were converted into temporary wells. A total of 19 soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.8 Investigation at the Colbert Packaging Facility (1511 W. Lusher Avenue)

Six soil borings (LGC08-SB01 through LGC08-SB06) were completed at this facility. All six soil borings were converted into temporary wells. A total of 14 soil samples and six

groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.9 Investigation at the Sturgis Metal Facility (1514 W. Lusher Avenue and 1819 14th Street)

Twelve soil borings (LGC09-SB01 through LGC09-SB12) were completed at this facility. Ten of the twelve soil borings were converted into temporary wells. A total of 18 existing monitoring wells were located on the site, but groundwater was only collected from seven of those existing wells. A total of 45 soil samples and 17 groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.10 Investigation at the Bristol Auto Parts West Facility (1422 W. Lusher Avenue)

U.S. EPA was unable to reach an agreement for access with the Bristol Auto Part West facility at the time of the sampling investigation; therefore, no soil or groundwater samples were collected at this facility.

3.3.11 Investigation at the Cullip Industries, Inc. Facility (1900 Fieldhouse Avenue)

Five soil borings (LGC11-SB01 through LGC11-SB05) were completed at this facility. All five soil borings were converted into temporary wells. A total of 14 soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.12 Investigation at the B-D Industries, Inc. Facility (1715 Fieldhouse Avenue)

Five soil borings (LGC12-SB01 through LGC12-SB05) were completed at the B-D Industries, Inc., facility. All five soil borings were converted into temporary wells. A total of fifteen soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples will be collected with a truck-mounted Geoprobe®.

3.3.13 Investigation at the Elkhart Plating Facility (1913 South 14th Street)

Five soil borings (LGC13-SB01 through LGC13-SB05) were completed at the Elkhart Plating facility. All five soil borings were converted into temporary wells. A total of 19 soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.14 Investigation at the Zurn Facility (1900 West Hively Avenue)

Five soil borings (LGC14-SB01 through LGC14-SB05) were completed at the Zurn facility. All five soil borings were converted into temporary wells. A total of 16 soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.15 Investigation at the Adorn Facility (1808 West Hively Avenue)

Five soil borings (LGC15-SB01 through LGC15-SB05) were completed at the Adorn facility. All five soil borings were converted into temporary wells. A total of 17 soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.16 Investigation at the Forest River, Inc. Facility (1800 West Hively Avenue)

Five soil borings (LGC16-SB01 through LGC16-SB05) were completed at the Forest River, Inc. facility. All five soil borings were converted into temporary wells. A total of 20 soil samples and five groundwater samples were collected and submitted for VOC analysis. All samples were collected with a truck-mounted Geoprobe®.

3.3.17 Investigation along the Conrail Right-of-Way

Two soil borings (LGC17-SB01 and LGC17-SB02) out of four soil borings planned for this area were completed at the Conrail Right-of-Way property. Both of the soil borings were converted into temporary wells. A total of six soil samples and two groundwater samples were collected

and submitted for VOC analysis. All samples were collected with a track-mounted Geoprobe®. Due to the presence of significant utilities north of the railroad tracks, two borings planned on this property were not completed.

3.3.18 Dump North of Conrail Right-of-Way

This dump was not located and, therefore, this property was not investigated during this investigation. No soil or groundwater samples were collected at this facility.

3.3.19 WeVac Plastics

U.S. EPA was unable to reach an agreement for access with WeVac Plastics at the time of the sampling investigation; therefore, no soil or groundwater samples were collected at this facility.

3.3.20 K.G. Gemeinhardt Company, Inc.

U.S. EPA was unable to reach an agreement for access to the Gemeinhardt facility at the time of the sampling investigation; therefore, no soil or groundwater samples were collected at this facility. Information from the Letter Report 2008 – Groundwater Recovery and Treatment System was utilized to assess this site. The letter report is provided in Appendix B.

3.4 SAMPLE NUMBERING SYSTEM

All samples collected for analytical testing, including quality control (QC) samples, were given a unique sample number. The sample numbers were recorded in the field logbook, the chain-of-custody (COC), and on the shipping documents.

WESTON assigned each sample a project sample number, which highlights the sample matrix and location. The project sample numbering system was composed of the following components:

Project Identifier

The first part of the project sample number consists of a three-character designation.

LGC01 – Lusher Avenue Facility 01

Facility Codes are provided below:

- 01 – Waterko Tool & Engineering
- 02 – Flexible Foam Products
- 03 – Gaska Tape
- 04 – Action Auto Salvage
- 05 – Vacant Property at 1706 W. Lusher Avenue
- 06 – Atlas Chemical Milling
- 07 – Holland Metal Fabricating Company
- 08 – Colbert Packaging
- 09 – Sturgis Metal (aka Elkhart Metal)
- 10 – Bristol Auto Parts West
- 11 – Cullip Industries, Inc.
- 12 – B-D Industries, Inc.
- 13 – Elkhart Plating
- 14 – Zurn Facility
- 15 – Adorn Facility
- 16 – Forest River, Inc.
- 17 – Conrail Right-of Way
- 18 – Dump North of Conrail Right-of-Way
- 19 – WeVac Plastics
- 20 – K.G. Gemeinhardt Company, Inc.

Sample Type and Sampling Location

Sample type and sampling location are identified by a two-character, sample-type code. For the proposed types of field sampling, the following codes were utilized during this phase or subsequent investigation phases, as applicable:

SB – Soil boring subsurface soil sample

GW – Groundwater sample

MW – Monitoring well

TMW – Temporary monitoring well

A sample location code. The above sample-type code was combined with sampling location identification (e.g., SB02 for subsurface soil sampling location 2, and GW02 for groundwater sampling location 2). For field blanks and trip blanks, the two-character, sample-type code was combined with FB for field blanks and TB for trip blanks (e.g., GWTB for a groundwater trip blank).

Sequence Identifier

The sequence identifier consists of the following:

A two-digit sequence number that tracks the number of samples collected from a specific location. Sequence 01 refers to the first sample interval, and sequence 02 refers to the second sample interval. Sample depths are not a part of the sample code; rather, depth information was recorded in the site field logbook and presented with the analytical results.

If the sample was a field duplicate sample, the above sequence number was combined with DP. If the sample was a matrix spike/matrix spike duplicate sample, the above was combined with MSD.

For field and trip blanks, the two-digit sequence number denoted the sequential number of field or trip blank samples collected for that sample type.

Field duplicate samples were submitted without reference to the laboratory (i.e., the laboratory was informed that the sample was duplicate).

Some examples of the WESTON project sample numbering system are as follows:

LGC-SB02-01DP – Lusher Street Groundwater Contamination Site; soil boring location 2; duplicate of first soil sample collected at this location.

LGC-GW03-01 – Lusher Street Groundwater Contamination Site; groundwater sample from soil boring location 3; first groundwater sample at this location.

LGC-TMW02-01 – Lusher Street Groundwater Contamination Site; groundwater sample from temporary monitoring well location 2; first groundwater sample at this location.

LGC-GW01-01MSD – Lusher Street Groundwater Contamination Site; groundwater sample from soil boring location 1; first sample collected at this location; sample is a matrix spike/matrix spike duplicate sample.

3.5 CLP SAMPLE NUMBERING SYSTEM

The CLP sample numbers are unique numbers that are assigned to each sample and are generated by the FORMS II Lite software. The CLP sample numbers enable the CLP Sample Management Office and Central Regional Laboratory (CRL) to track samples through their systems. The CLP numbers are placed on the outsides of the sample containers, and the numbers are used on all sample documentation (for example, chain-of-custody forms and sample tags). The CLP sample numbers correlate to the WESTON project sample numbers and, therefore, identify where each sample was collected.

3.6 DATA VALIDATION

The U.S. EPA Region V Environmental Services Assistance Team (ESAT) performed data validation prior to data receipt by WESTON. The resulting data validation qualifiers were provided electronically to WESTON in the Electronic Data Deliverables (EDDs). WESTON performed a compliance check on all data.

4. INVESTIGATION RESULTS

This section presents the results of soil and groundwater sampling data collected during the field investigation. All soil samples were collected using standard operating procedures (SOPs) and were analyzed for VOCs using CLP Target Compound List (TCL) Volatiles using CLP S0M01.2 (5035 extraction) method. Groundwater samples were analyzed for CLP TCL Trace Volatiles using CLP S0M01.2 (trace level) method. Soil and groundwater samples collected during April and May 2009 were sent to CLP laboratory KAP Technologies, Inc. in The Woodlands, Texas. Soil and groundwater samples collected during October 2009 were sent to CLP laboratory TestAmerica Laboratories in South Burlington, Vermont. The analytical results are provided in Appendix D.

4.1 WALKER TOOL FACILITY (1935 LUSHER AVENUE PROPERTY)

START collected sixteen soil samples from five soil boring locations at the 1935 W. Lusher Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. One groundwater sample was also collected from an existing monitoring well at this property. The sample locations are shown on Figures 1 and 2.

4.1.1 Soil Samples

No chlorinated solvents of interest were detected in soil samples collected from this property. Other VOCs detected in soil samples includes chloroform, methylene chloride and acetone. The soil sample results are provided in Table 4-1 and Figure 1.

4.1.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater sample GW05 is considered to be an up-gradient location; groundwater samples GW01 and GW04 are considered to be side-gradient sample locations; and groundwater samples MW01, GW02 and GW03 are considered to

be down-gradient sample locations. The groundwater sample results are provided in Table 4-2 and Figure 2.

The chlorinated solvents of interest detected in up-gradient groundwater sample GW05 include 1,1,1-TCA (0.78 µg/L) and PCE (4.7 µg/L). Other VOCs were not detected in the up-gradient groundwater samples.

The chlorinated solvents of interest detected in the side gradient and down-gradient groundwater sample are summarized below:

- 1,1,1-TCA (15 µg/L), and PCE (29 µg/L) were detected in groundwater sample GW01;
- 1,1,1-TCA (2.8 µg/L); cis-1,2-DCE (2.6 µg/L); PCE (40 µg/L); and TCE (1.2 µg/L) were detected in groundwater sample GW02;
- 1,1,1-TCA (1.3 µg/L) and PCE (0.39 µg/L) were detected in groundwater sample GW03;
- TCE (0.28 µg/L) was detected in groundwater sample GW04; and
- 1,1,1-TCA (8.6 µg/L) was detected groundwater sample MW01.

Additionally, toluene and chloromethane were detected in the groundwater samples.

4.1.3 Summary

This property may be contributing chlorinated solvent of interest to groundwater because compared to the up-gradient groundwater sample, the chlorinate solvents of interest detected in down-gradient and side-gradient samples are at higher concentrations. Also there is a possibility for a groundwater contamination source to be present west and south of GW01. PCE in groundwater samples GW01 and GW02 have exceeded the MCL of 5 µg/L.

4.2 FLEXIBLE FOAM FACILITY (1900 LUSHER AVENUE PROPERTY)

START collected 15 soil samples from five soil boring locations at the 1900 W. Lusher Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 3 and 4.

4.2.1 Soil Samples

TCE (3.4 J $\mu\text{g}/\text{kg}$) was the only chlorinated solvent of interest detected in soil samples collected from soil boring SB04.

Other VOCs detected in soil samples included acetone, carbon disulfide and toluene. The soil sample results are summarized in Table 4-3 and Figure 3.

4.2.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater sample TMW05 is considered to be an up-gradient location; groundwater samples GW01 and GW04 are considered to be side-gradient locations; and groundwater samples GW02 and GW03 are considered to be down-gradient locations at this property. The groundwater sample results are summarized in Table 4-4 and Figure 4.

1,1,1-TCA (4.5 $\mu\text{g}/\text{L}$) was the only chlorinated solvent of interest detected in up-gradient groundwater sample TMW05. Other VOCs detected in up-gradient groundwater sample TMW05 include toluene and trichlorofluoromethane.

The chlorinated solvents of interest detected in the side-gradient and down-gradient groundwater samples are summarized below:

- 1,1,1-TCA (0.55 $\mu\text{g}/\text{L}$), and PCE (0.4 J $\mu\text{g}/\text{L}$) were detected in groundwater sample GW01;
- 1,1,1-TCA (0.42 J $\mu\text{g}/\text{L}$), PCE (3 $\mu\text{g}/\text{L}$), and TCE (0.48 J $\mu\text{g}/\text{L}$) were detected in groundwater sample GW03; and
- 1,1,1-TCA (0.38 J $\mu\text{g}/\text{L}$), PCE (1.7 $\mu\text{g}/\text{L}$), , and TCE at (6.7 $\mu\text{g}/\text{L}$) were detected in groundwater sample GW04.

Additionally benzene, toluene trichlorofluoromethane and chloroform were detected in down-gradient groundwater samples.

4.2.3 Summary

An increase in concentrations of chlorinated solvents of interest in side-gradient and down-gradient groundwater samples suggests that this property may be contributing chlorinated solvents of interest to the groundwater. Also there is a possibility that contamination may be coming from an up-gradient source. TCE in groundwater sample GW04 has exceeded the MCL of 5 µg/L.

4.3 GASKA FACILITY (1810 LUSHER AVENUE PROPERTY)

START collected 17 soil samples from six soil boring locations at the 1810 W. Lusher Avenue property. At each of the six soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 5 and 6.

4.3.1 Soil Samples

PCE (8.1 and 550 µg/kg) was the only chlorinated solvent of interest detected in soil boring SB02. Other VOCs detected in soil samples include acetone and chloroform. The soil sample results are summarized in Table 4-5 and Figure 5.

4.3.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater sample GW01 is considered to be an up-gradient location; groundwater samples GW02 and GW06 are considered to be side-gradient locations; and groundwater samples GW03, GW04, and GW05 are considered to be down-gradient locations for this property. The groundwater sample results are summarized in Table 4-6 and Figure 6.

The chlorinated solvent of interest detected in up-gradient groundwater sample GW01 includes PCE (0.25 µg/L). Other VOCs detected in up-gradient samples include benzene and toluene.

The chlorinated solvents of interest detected in the side-gradient and down-gradient groundwater sample are summarized below:

- 1,1,1-TCA (1.3 µg/L), cis-1,2-DCE (0.47 J µg/L), PCE (65 µg/L), and TCE (18 µg/L) were detected in groundwater sample GW02;
- 1,1,1-TCA (0.39 J µg/L) and TCE (1.8 µg/L) were detected in groundwater sample GW03;
- 1,1,1-TCA (2.4 µg/L) and TCE (0.58 µg/L) were detected in groundwater sample GW04;
- 1,1,1-TCA (0.21 J µg/L), , PCE(0.21 J µg/L), and TCE (0.6 µg/L) were detected in groundwater sample GW05; and
- PCE (1.2 µg/L) was detected in groundwater sample GW06.

Other VOCs, including chloroform, benzene, methylcyclohexane and toluene were detected in down-gradient groundwater samples.

4.3.3 Summary

PCE was detected in soil sample collected on this property and, compared to the up-gradient groundwater sample, an increase in concentrations of chlorinated solvents of interest were observed in side-gradient and down-gradient groundwater samples, which suggests that there is most likely a source of chlorinated solvent present on this property. PCE and TCE in groundwater sample GW02 have exceeded the MCL of 5 µg/L.

4.4 ATLAS CHEMICAL MILLING FACILITY (1627 W. LUSHER AVENUE PROPERTY)

START collected 13 soil samples from five soil boring locations at the 1627 W. Lusher Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. Three groundwater samples were also collected from three existing monitoring wells. The sample locations are shown on Figures 7 and 8.

4.4.1 Soil Samples

TCE (1.7 J µg/kg) was the only chlorinated solvent detected in soil boring SB05. Other VOCs detected in soil samples include toluene (4.6 J µg/kg). The soil sample results are summarized in Table 4-7 and Figure 7.

4.4.2 Groundwater Samples

Based on the northerly groundwater flow direction, groundwater samples MW03 and GW04 are considered to be up-gradient locations for this property; groundwater samples MW01, GW02, and GW05 are considered to be side-gradient locations; groundwater samples GW01, and MW02 were collected from the down-gradient soil boring locations at this property. The groundwater sample results are summarized in Table 4-8 and Figure 8.

The chlorinated solvents of interest detected in up-gradient groundwater samples MW03 and GW04 include 1,1,1-TCA (0.48 J and 3.5 µg/L), TCE (1.6 and 5.1 µg/L), and PCE (0.61 µg/L).

The chlorinated solvents of interest detected in the side gradient and down-gradient groundwater sample are summarized below:

- PCE (1.3 µg/L) was detected in groundwater sample GW02;
- 1,1,1-TCA (3.3 µg/L), and TCE (1.8 µg/L) were detected in groundwater sample GW05; and
- 1,1,1-TCA (7.2 µg/L), PCE (0.67 µg/L) and TCE (3.9 µg/L) were detected groundwater sample MW01.

Other VOCs, including acetone, benzene, cyclohexane, methylcyclohexane, toluene, bromodichloromethane, chloroform and xylenes were detected in down-gradient groundwater samples.

4.4.3 Summary

Since the concentration of 1,1,1-TCA in down-gradient groundwater sample is higher compared to up-gradient groundwater sample there may be a chlorinated solvent source at this property. TCE in groundwater sample GW04 has exceeded the MCL of 5 µg/L.

4.5 HOLLAND METAL FABRICATING FACILITY (1550 W. LUSHER AVENUE PROPERTY)

START collected 19 soil samples from five soil boring locations at the 1550 W. Lusher Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 9 and 10.

4.5.1 Soil Samples

1,1,1-TCA (6.9 J $\mu\text{g/kg}$) and PCE (1.9 J to 20 J $\mu\text{g/kg}$) were detected in soil samples collected from soil borings. Other VOCs detected in soil samples include chloroform, acetone, methylene chloride, and toluene. The soil sample results are summarized in Table 4-9 and Figure 9

4.5.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater sample GW04 is considered to be an up-gradient location for this property. Groundwater samples GW03 was collected from the side-gradient location; groundwater sample GW01, GW02, and GW05 were collected from the down-gradient locations for this property. The groundwater sample results are summarized in Table 4-10 and Figure 10.

Chlorinated solvents of interest were not detected in up-gradient groundwater sample GW04.

- 1,1,1-TCA (4.4 $\mu\text{g/L}$), PCE (34 $\mu\text{g/L}$) and TCE (0.84 $\mu\text{g/L}$) were detected in one down-gradient groundwater sample GW05.

4.5.3 Source of Contamination

Since chlorinated solvents of interest were detected in soil samples and in one down-gradient groundwater sample on this property it is likely that there is a chlorinated solvent source on this property. PCE in groundwater sample GW05 has exceeded the MCL of 5 $\mu\text{g/L}$.

4.6 COLBERT PACKAGING FACILITY (1511 W. LUSHER AVENUE PROPERTY)

START collected 14 soil samples from six soil boring locations at the 1511 W. Lusher Avenue property. At each of the six soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 11 and 12.

4.6.1 Soil Samples

No chlorinated solvents of interest were detected in the soil samples collected at this property. Acetone was the only other VOC detected at this property. The soil sample results are summarized in Table 4-11 and Figure 11.

4.6.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater samples GW02 and GW03 are considered to be up-gradient locations for this property; groundwater sample GW01 and GW04 are considered to be side-gradient locations; and groundwater samples GW05 and GW06 are considered to be down-gradient locations of this property. The groundwater sample results are summarized in Table 4-12 and Figure 12.

Chlorinated solvents of interest were not detected in up-gradient groundwater samples collected on this property. Benzene and toluene were other VOCs detected in up-gradient groundwater samples.

Chlorinated solvents of interest were not detected in down-gradient groundwater samples collected on this property. Benzene, cyclohexane, methylcyclohexane and toluene were other VOCs detected in down-gradient groundwater samples.

4.6.3 Summary

Chlorinated solvents of interest were not detected in the soil or groundwater samples collected on this property, therefore, this property likely is not a source of chlorinated solvents in the groundwater.

4.7 STURGIS FACILITY (1819 SOUTH 14TH STREET PROPERTY)

START collected 45 soil samples from 11 soil boring locations at the 1819 South 14th Street property. At each of the 11 soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. Groundwater samples were also collected from seven existing monitoring wells throughout the property. The sample locations are shown on Figures 13 and 14

4.7.1 Soil Samples

1,1,1, TCA (2.6 J to 930 µg/kg), PCE (4.5 J µg/kg), TCE (27 to 160 µg/kg), cis-1,2-DCE (3.3 J to 430 µg/kg), and trans-1,2-DCE (5.8 J to 14 µg/kg) were detected in soil samples collected from various soil borings installed at the site. Other VOCs detected in soil sample include 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), chloroform, acetone, methylene chloride, benzene, cyclohexane, methylcyclohexane, xylenes, chloroethane, ethylbenzene, isopropylbenzene, and methacyclohexane. The soil sample results are summarized in Table 4-13 and Figure 13.

4.7.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater samples GW10 and GW12 are considered to be up-gradient locations for this property; groundwater sample GW01, GW03 and GW09 are considered to be side-gradient locations; and groundwater samples GW05, GW07, GW08, MW07 and MW09 are considered to be down-gradient locations of the property. The groundwater sample results are summarized in Table 4-14 and Figure 14.

Chlorinated solvents of interest detected in up-gradient groundwater samples include 1,1-DCA (1.5 µg/L); 1,1,1-TCA (27 µg/L) and TCE (0.58 to 0.6 µg/L).

Toluene was also detected in up-gradient groundwater sample GW12.

The chlorinated solvents of interest detected in the side-gradient and down-gradient groundwater sample are summarized below:

- TCE (0.58 µg/L) was detected in groundwater sample GW01;
- TCE (1.9 µg/L) was detected in groundwater sample GW05;
- TCE (200 µg/L) was detected in groundwater sample MW07;
- 1,1,1-TCA (1.9 µg/L), TCE (27 µg/L) and cis-1,2-DCE (1.3 µg/L) were detected in groundwater sample MW09;
- 1,1,1-TCA (0.3 J µg/L), TCE (2.6 µg/L) and cis-1,2-DCE (3.4 µg/L) were detected in groundwater sample TMW06;
- 1,1,1-TCA (44 µg/L), TCE (44 µg/L), vinyl chloride (7.1 µg/L) and cis-1,2-DCE (84 µg/L) were detected in groundwater sample GW07;
- 1,1,1-TCA (2,700 µg/L), vinyl chloride (510 µg/L) and cis-1,2-DCE (5,900 µg/L) were detected in groundwater sample GW08; and
- 1,1,1-TCA (65 µg/L), TCE (34 µg/L), and cis-1,2-DCE (1.7 µg/L) were detected in groundwater sample GW09.

Additionally toluene, 2-hexanone, benzene, cyclohexane, acetone, ethylbenzene, isopropyl benzene, xylenes, and methylcyclohexane, were detected in down-gradient groundwater samples.

4.7.3 Summary

This property is likely contributing chlorinated solvents to groundwater because the chlorinated solvents were detected in the soil samples and were at significantly high concentrations in side-gradient and down-gradient groundwater samples when compared to up-gradient samples. The MCLs that were exceeded for chlorinated solvent of interest include 1,1,1-TCA, TCE, PCE, and vinyl chloride. The MCLs for 1,1,1-TCA, TCE, PCE, cis 1,2-DCE and vinyl chloride are 200 µg/L, 5 µg/L, 5 µg/L, 70 µg/L and 2 µg/L, respectively.

4.8 CULLIP INDUSTRIES FACILITY (1900 FIELDHOUSE AVENUE PROPERTY)

START collected 14 soil samples from five soil boring locations at the 1900 Fieldhouse Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 15 and 16.

4.8.1 Soil Samples

Chlorinated solvents were not detected in soil samples collected at this property. Other VOCs detected at this property include chloroform, toluene and methylene chloride. The soil sample results are summarized in Table 4-15 and Figure 15.

4.8.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater sample GW05 is considered to be an up-gradient location for this property; groundwater samples GW01, GW03, and GW04 are considered to be side-gradient locations; and groundwater samples GW02 is considered to be a down-gradient location of the property. The groundwater sample results are summarized in Table 4-16 and Figure 16.

Chlorinated solvents and other VOCs were not detected in the up-gradient groundwater sample GW05.

The chlorinated solvents detected in the side-gradient and down-gradient groundwater samples are summarized below:

- TCE (0.31 J $\mu\text{g/L}$) was detected at low concentration in groundwater sample GW01; and
- 1,1,1-TCA (0.49 J $\mu\text{g/L}$) was detected at low concentration in groundwater sample GW02.

Additionally, toluene and benzene were detected in down-gradient groundwater samples.

4.8.3 Summary

This property likely is not contributing chlorinated solvents to the groundwater because chlorinated solvents were not detected in soil samples and were detected at very low concentrations in down-gradient and side-gradient groundwater samples.

4.9B-D INDUSTRIES FACILITY (1715 FIELDHOUSE AVENUE PROPERTY)

START collected 15 soil samples from five soil boring locations at the 1715 Fieldhouse Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 17 and 18.

4.9.1 Soil Samples

TCE (3.2 J to 6.5 ug/kg) was the only chlorinated solvent of interest detected in the soil samples collected on this property. Other VOCs detected in soil samples include chloroform, acetone, bromomethane, toluene, and chlorobenzene. The soil sample results are summarized in Table 4-17 and Figure 17

4.9.2 Groundwater Samples

Based on the northerly groundwater flow direction, groundwater sample GW05 is considered to be an up-gradient location for this property; groundwater samples GW03 and GW04 are considered to be side-gradient locations; and groundwater samples GW01 and GW02 are considered to be down-gradient locations of the property. The groundwater sample results are summarized in Table 4-18 and Figure 18.

TCE (1.7 µg/L) was the only chlorinated solvent of interest detected in the up-gradient groundwater sample GW05. No other VOCs were detected in the up-gradient groundwater sample.

The chlorinated solvents of interest detected in the side-gradient and down-gradient groundwater samples are summarized below:

- 1,1,1 TCA (12 µg/L) and TCE (85 µg/L) were detected in groundwater sample GW01;
- 1,1,1 TCA (5.5 µg/L), PCE (0.62 µg/L) and TCE (48 µg/L) were detected in groundwater sample GW02;
- 1,1,1 TCA (0.95 µg/L) and TCE (4.4 µg/L) were detected in groundwater sample GW03; and

- 1,1,1 TCA (0.84 µg/L) and TCE (35 µg/L) were detected in groundwater sample GW04.

Other VOCs detected in down-gradient groundwater samples includes toluene, chloroform and bromodichloromethane.

4.9.3 Summary

This property likely is contributing chlorinated solvents to groundwater because low levels of chlorinated solvents of interest were detected in the soil samples; and were at significantly higher concentrations in side-gradient and down-gradient groundwater samples when compared to up-gradient groundwater samples. The MCL of 5 µg/L for TCE was exceeded on this property.

4.10 ELKHART PLATING FACILITY (1913 14TH STREET PROPERTY)

START collected 19 soil samples from five soil boring locations at the 1913 South 14th Street property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 19 and 20.

4.10.1 Soil Samples

PCE (4.7 J to 5.1 J µg/kL) and, TCE (13 to 82 µg/kg) were detected in soil samples collected from one soil boring installed at the site. Other VOCs detected in soil samples include acetone, methylene chloride and toluene. The soil sample results are summarized in Table 4-19 and Figure 19.

4.10.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater sample GW02 is considered to be an up-gradient location; groundwater sample GW01 and GW05 are considered to be side-gradient locations; and groundwater samples GW03 and GW04 are considered to be down-gradient locations of the property. The groundwater sample results are summarized in Table 4-20 and Figure 20.

Chlorinated solvents of interest were not detected in the up-gradient groundwater sample GW02. Other VOCs detected in the up-gradient groundwater samples include benzene, cyclohexane, ethylbenzene, isopropylbenzene, xylenes and toluene.

Chlorinated solvent of interest TCE (0.23 J $\mu\text{g/L}$) was detected in one side-gradient groundwater sample. Other VOCs detected in groundwater samples include toluene, and methylcyclohexane.

4.10.3 Summary

Since PCE and TCE were detected in soil samples, there appears to be a chlorinated solvent source on this property

4.11 ZURN FACILITY (1900 WEST HIVELY AVENUE PROPERTY)

START collected 16 soil samples from five soil boring locations at the 1900 West Hively Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 21 and 22.

4.11.1 Soil Samples

1,1,1-TCA (4.5 J $\mu\text{g/kg}$) was the only chlorinated solvent of interest detected in soil samples collected from one soil boring installed on this property. Other VOCs detected in soil samples include acetone, and 2-butanone. The soil sample results are summarized in Table 4-21 and Figure 21.

4.11.2 Groundwater Samples

Based on the northerly groundwater flow direction, the soil sample TMW01 is considered to be an up-gradient location; groundwater samples GW02 and GW04 are considered to be side-gradient locations; and groundwater samples GW03 and GW05 are considered to be down-gradient locations of the property. The groundwater sample results are summarized in Table 4-22 and Figure 22

Chlorinated solvents of interest TCE (1.4 µg/L) and PCE (1.2 µg/L) were detected in the up-gradient groundwater sample TMW01. Other VOCs detected in the up-gradient groundwater sample include acetone and toluene.

The chlorinated solvents of interest detected in the side-gradient and down-gradient groundwater samples are summarized below:

- TCE (0.26 J µg/L) was detected in groundwater sample GW03;
- 1,1,1 TCA (13 µg/L) was detected in groundwater sample GW04; and
- TCE (0.85 µg/L) was detected in groundwater sample GW05.

Other VOCs detected in groundwater samples includes acetone, benzene, toluene, chloroform and 1,1,1-DCA.

4.11.3 Summary

This property may be contributing chlorinated solvent 1,1,1 TCA to groundwater because 1,1,1-TCA was detected in the down-gradient groundwater sample and was not detected in the up-gradient groundwater sample, and a low level of 1,1,1-TCA was detected in one soil sample.

4.12 ADORN FACILITY (1808 WEST HIVELY AVENUE PROPERTY)

START collected 17 soil samples from five soil boring locations at the 1808 West Hively Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 23 and 24.

4.12.1 Soil Samples

No chlorinated solvents of interest were detected in the soil samples collected on this property. Other VOCs detected in soil samples include acetone, and toluene. The soil sample results are summarized in Table 4-23 and Figure 23

4.12.2 Groundwater Samples

Based on the northerly groundwater flow direction, the soil boring TMW04 is considered to be an up-gradient location; groundwater sample GW01 and GW05 are considered to be side-gradient locations; and groundwater samples GW02 and GW03 are considered to be down-gradient locations of the property. The groundwater sample results are summarized in Table 4-24 and Figure 24.

No chlorinated solvents of interest were detected in the up-gradient groundwater sample TMW04. Toluene was the only other VOC detected in the up-gradient groundwater sample.

The chlorinated solvents of interest detected in the side-gradient and down-gradient groundwater samples are summarized below:

- 1,1,1 TCA (0.25 J $\mu\text{g/L}$) was detected in groundwater sample GW02; and
- 1,1,1 TCA (0.47 J $\mu\text{g/L}$) was detected in groundwater sample GW05.

Other VOCs detected in groundwater samples include cyclohexane, methylcyclohexane, toluene, and benzene.

4.12.3 Source of Contamination

This property likely is not contributing chlorinated solvents of interest to the groundwater because the chlorinated solvents of interest were not detected in soil samples and very low levels of 1,1,1 TCA were detected in side-gradient and down-gradient groundwater samples.

4.13 FOREST RIVER FACILITY (1800 WEST HIVELY AVENUE PROPERTY)

START collected 20 soil samples from five soil boring locations at the 1800 West Hively Avenue property. At each of the five soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 25 and 26.

4.13.1 Soil Samples

No chlorinated solvents of interest were detected in the soil samples collected on this property. Other VOCs detected in the soil samples include chloroform and toluene. The soil sample results are summarized in Table 4-25 and Figure 25

4.13.2 Groundwater Samples

Based on the northerly groundwater flow direction, the groundwater sample GW01 is considered to be an up-gradient location; groundwater samples GW02 and TMW05 are considered to be side-gradient locations; and groundwater samples GW03 and GW04 are considered to be down-gradient locations of the property. The groundwater sample results are summarized in Table 4-26 and Figure 26.

No chlorinated solvents of interest were detected in the up-gradient sample GW01. Other VOCs detected in the up-gradient sample GW01 include toluene and benzene.

Chlorinated solvent of interest 1,1,1 TCA ($0.44 \text{ J } \mu\text{g/L}$) was detected in one groundwater sample collected from side-gradient well TMW05. Other VOCs detected in groundwater samples include benzene, toluene and xylenes.

4.13.3 Summary

This property likely is not contributing chlorinated solvents of interest to the groundwater because the chlorinated solvents of interest were not detected in soil samples and only very low levels of 1,1,1 TCA were detected in side-gradient groundwater samples.

4.14 CONRAIL RIGHT-OF-WAY PROPERTY

START collected six soil samples from two soil boring locations at the Conway Right-of-Way property. At each of the two soil borings locations a temporary monitoring well was installed and a groundwater sample was collected. The sample locations are shown on Figures 27 and 28.

4.14.1 Soil Samples

No chlorinated solvents of interest were detected in soil samples collected on this property. Other VOCs detected on this property include acetone and methylene chloride. The soil sample results are summarized in Table 4-27 and Figure 27.

4.14.2 Groundwater Samples

Based on the northerly groundwater flow direction, both groundwater samples GW01 and GW02 are considered to be up-gradient sample locations for this property. START was not able to collect two down-gradient samples planned on this property because of the presence of significant utilities on the north side of the railroad. The groundwater sample results are summarized in Table 4-28 and Figure 28.

The chlorinated solvents of interest detected in the up-gradient groundwater samples are 1,1,1 TCA (0.29 J to 2.1 µg/L) and TCE (3.8 to 110 µg/L).

Other VOCs detected in the groundwater samples include benzene, cyclohexane, methylcyclohexane, and toluene.

4.14.3 Summary

Since no TCE was detected in the soil samples and TCE was detected at significantly high concentrations in groundwater sample GW01 a significant source south of this sample location is expected. The MCL of 5 µg/L for TCE was exceeded on this property.

5. SUMMARY OF INVESTIGATION

This section summarizes the results of the preliminary assessment. The main focus of the assessment was to identify potential properties contributing contaminants of concern to groundwater contamination. The results are summarized below based on the results of investigation at each property.

5.1 WALERKO TOOL FACILITY (1935 WEST LUSHER AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property may be contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- Chlorinated solvents of interest were detected in down-gradient and side-gradient groundwater samples at higher concentrations compared to the up-gradient groundwater sample
- There is a possibility for groundwater contamination source to be present west and south of GW01; and
- PCE in groundwater samples GW01 and GW02 have exceeded the MCL of 5 µg/L.

5.2 FLEXIBLE FOAM FACILITY (1900 WEST LUSHER AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property may be contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- Chlorinate solvents of interest were detected in down-gradient and side-gradient groundwater samples at higher concentrations compared to up-gradient groundwater samples;
- There is a possibility that contamination may be coming from an up-gradient source; and
- TCE in groundwater sample GW02 has exceeded the MCL of 5 µg/L.

5.3 GASKA FACILITY (1810 LUSHER AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property likely is contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- PCE was detected in a soil sample collected on this property;
- Chlorinate solvents of interest were detected in down-gradient and side-gradient groundwater samples at higher concentrations compared to up-gradient groundwater samples; and
- PCE and TCE in groundwater sample GW02 have exceeded the MCL of 5 µg/L.

5.4 ATLAS CHEMICAL MILLING FACILITY (1627 WEST LUSHER AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property may be contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- 1,1,1-TCA was detected in side-gradient groundwater samples at higher concentrations compared to up-gradient groundwater samples.

5.5 HOLLAND METAL FABRICATING FACILITY (1550 WEST LUSHER AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property may be contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- Chlorinated solvents of interest were detected in soil samples;
- Chlorinate solvents of interest were detected in down gradient groundwater samples at higher concentrations compared to up-gradient groundwater samples; and
- PCE in groundwater sample GW05 has exceeded the MCL of 5 µg/L.

5.6 COLBERT PACKAGING FACILITY (1511 WEST LUSHER AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property may not be contributing chlorinated solvents of interest to groundwater because chlorinated solvents of interest were not detected in the soil or groundwater samples collected on this property.

5.7 STURGIS FACILITY (1819 14TH STREET PROPERTY)

Based on the soil sample results and groundwater sample results, this property likely is contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- Chlorinated solvents of interest were detected in soil samples;
- Chlorinate solvents of interest were detected in down-gradient groundwater samples at higher concentrations compared to up-gradient groundwater samples; and
- The MCLs that were exceeded for chlorinated solvent of interest include 1,1,1-TCA, TCE, PCE, and vinyl chloride. The MCLs for 1,1,1-TCA, TCE, PCE, cis 1,2-DCE and vinyl chloride are 200 µg/L, 5 µg/L, 5 µg/L, 70 µg/L and 2 µg/L, respectively.

5.8 CULLIP INDUSTRIES FACILITY (1900 FIELDHOUSE AVENUE PROPERTY)

This property may not be contributing chlorinated solvents of interest to the groundwater because chlorinated solvents were not detected in soil samples and were detected at very low concentrations in down-gradient and side-gradient groundwater samples.

5.9 B-D INDUSTRIES FACILITY (1715 FIELDHOUSE AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property likely is contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- Chlorinated solvents of interest were detected in soil samples;
- Chlorinate solvents of interest were detected in down-gradient groundwater samples at higher concentrations compared to up-gradient groundwater samples; and

- The MCL of 5 µg/L for TCE was exceeded on this property.

5.10 ELKHART PLATING FACILITY (1913 14TH STREET PROPERTY)

There may be a chlorinated solvent source on this property since chlorinated solvents of interest were detected in soil samples collected on this property

5.11 ZURN FACILITY (1900 WEST HIVELY AVENUE PROPERTY)

Based on the soil sample results and groundwater sample results, this property may be contributing chlorinated solvents of interest to groundwater based on the summary provided below:

- This property may be contributing chlorinated solvent 1,1,1-TCA to groundwater because 1,1,1-TCA was detected in the down-gradient groundwater sample and was not detected in the up-gradient groundwater sample;
- Low levels of 1,1,1-TCA were detected in one soil sample; and
- Since PCE and TCE were detected in up-gradient groundwater sample, there is potential for a chlorinated solvent source to be present south of this location.

5.12 ADORN FACILITY (1808 WEST HIVELY AVENUE PROPERTY)

This property may not be contributing chlorinated solvents of interest to groundwater because the chlorinated solvents of interest were not detected in soil samples and very low levels of 1,1,1-TCA were detected in side-gradient and down-gradient groundwater samples.

5.13 FOREST RIVER FACILITY (1800 WEST HIVELY AVENUE PROPERTY)

This property may not be contributing chlorinated solvents of interest to groundwater because the chlorinated solvents of interest were not detected in soil samples and very low levels of 1,1,1-TCA were detected in side-gradient groundwater sample.

5.14 CONRAIL RIGHT-OF-WAY PROPERTY

Due to presence of significant utilities on the down-gradient side of the rail road a determination for presence of a chlorinated solvents source cannot be made at this time; however, TCE was detected at significantly high concentrations in groundwater sample GW01, therefore, a significant source south of this sample location is expected. The MCL of 5 µg/L for TCE was exceeded on this property.

5.15 K.G. GEMEINHARDT COMPANY, INC.

Based on the Gemeinhardt Report presented in Appendix B, a significant groundwater contamination with chlorinated solvents of interest has been detected in groundwater samples collected outside the eastern current boundary of the Lusher Street Site; and in the onsite down-gradient monitoring wells. This suggests that significant groundwater contamination from the Gemeinhardt property is leaving the site. Furthermore, the contamination found in the Gemeinhardt groundwater was also detected at an up-gradient groundwater sample (TMW01) collected on the Zurn property and side-gradient groundwater sample (GW01) collected on Walterko's property. Based on the sampling presented in the Gemeinhardt report, it is not known if the contamination from Gemeinhardt is present west of Nappanee Street; however, two samples, GW01 and TMW01 (described above), suggest a possibility of groundwater contamination from Gemeinhardt comingling with the groundwater contamination with the Lusher Steet Site. To determine this, a significant level of investigation of groundwater flow and contamination, as described below, will be necessary:

- Significant level of investigation between Gemeinhardt and Zurn;
- Investigation of properties between the Gemeinhardt and Zurn properties also have to be investigated.; and
- Significant investigation west of Nappanee Street to determine if the contamination from Gemeinhardt is also impacting groundwater contamination at the Lusher Street Site.

COMPACT DISC

CONTAINS

FIGURES

TABLES

APPENDIX A – SITE INFORMATION FROM WEB

APPENDIX B – GEMEINHARDT LETTER REPORT

APPENDIX C – BORING LOGS

APPENDIX D – VALIDATED ANALYTICAL RESULTS

APPENDDDIX D – SITE-WIDE FIGURES